

Appl. No. 09/415,481

Reply to Office action of February 25, 2005

AMENDMENTS TO THE CLAIMS

Please amend the claims without prejudice or disclaimer to read as follows:

Claims 1 – 38 (Cancelled).

Claim 39 (currently amended). A transparent capacitive touch sensing system comprising:

a substrate;

a sensory array disposed on the substrate and comprising a plurality of substantially transparent conductive traces disposed along a first axis, the sensory array covering a portion of the substrate, wherein the sensory array is configured to sense capacitively the input object along a second axis;

a substantially transparent and electrically conductive ground plane ~~coupled to the bottom of the substrate and configured to shield electrically the~~ a bottom of said sensory array opposite the input object; and

a sensing device for detecting capacitance changes on said sensory array.

Claim 40 (previously presented). The system of claim 39, further including a position detector for determining a position of said input object near said sensory array.

Claim 41 (previously presented). The system of claim 39, further including a system that recognizes tap gestures.

Claim 42 (previously presented). The system of claim 39, wherein said substrate is a flexible, transparent substrate.

Claim 43 (previously presented). The system of claim 39, wherein said substrate is a rigid, transparent substrate.

Claim 44 (cancelled).

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Claim 45 (previously presented). The system of claim 39, wherein said sensory array is atop a display device.

Claims 46-54 (Cancelled).

Claim 55 (currently amended). A transparent capacitive touch sensing system comprising:

a substantially transparent two-dimensional sensory array consisting of a plurality of substantially transparent conductive traces in an X axis and a plurality of substantially transparent conductive traces in a Y axis for sensing capacitive coupling between an input object and said sensory array along two axes, wherein a bottom of said sensory array opposite the input object is electrically shielded using a substantially transparent and electrically conductive ground plane;

a substantially transparent electrically insulating material separating said plurality of X traces from said plurality of Y traces; and

a sensing device for detecting capacitance changes on said sensory array.

Claims 56-59 (cancelled).

Claim 60 (currently amended). A transparent capacitive touch sensing system comprising:

a substantially transparent two-dimensional sensory array consisting of a plurality of substantially transparent conductive traces in an X axis and a plurality of substantially transparent conductive traces in a Y axis for sensing capacitive coupling between an input object and said sensory array along two axes, wherein said conductive traces in the X axis and the Y axis are spaced such that conductive traces in the X axis substantially fill spaces between conductive traces in the Y axis to thereby form a substantially space-filling pattern across said sensory array;

a substantially transparent electrically insulating material separating said plurality of X traces from said plurality of Y traces; and

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a sensing device for detecting capacitance changes on said sensory array.

Claim 61 (previously presented). The system of claim 60, wherein said sensory array comprises a plurality of layers having approximately the same index of refraction.

Claim 62 (previously presented). The system of claim 60, wherein said sensory array is atop a display device.

Claim 63 (previously presented). The system of claim 60, wherein said sensory array is beneath a clear protective covering for a display device.

Claim 64 (currently amended). A system comprising In combination:
a liquid crystal display having a top polarizer layer; and
a transparent touchpad directly disposed on said top polarizer layer, including
a plurality of first conductors disposed along an X axis directly on said top
polarizer layer; and
a plurality of second conductors disposed along a Y axis and insulated from
said plurality of first conductors disposed along said X axis.

Claim 65 (currently amended). The ~~combination~~ system of Claim 64, wherein an insulating layer insulates said plurality of first conductors disposed along said X axis from said plurality of second conductors disposed along said Y axis.

Claim 66 (currently amended). The ~~combination~~ system of Claim 64, further comprising an adhesive layer disposed on one of said first and said second plurality of conductors.

Claim 67 (currently amended). The ~~combination~~ system of Claim 66, further comprising a transparent layer disposed on said adhesive layer.

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Claim 68 (currently amended). A system comprising In combination:
a liquid crystal display having a top polarizer layer; and
a transparent touchpad directly disposed on said top polarizer layer, including
a plurality of conductors disposed along at least one axis directly on said top polarizer layer.

Claim 69 (currently amended). A system comprising In combination:
a liquid crystal display having a top polarizer layer; and
a transparent touchpad directly disposed on said top polarizer layer, including
a plurality of conductors disposed along at least one axis directly on said top polarizer layer.

Claim 70 (currently amended). The combination system of Claim 69, wherein an
insulating layer insulates said plurality of first conductors disposed along said X axis from said
plurality of second conductors disposed along said Y axis.

Claim 71 (currently amended). The combination system of Claim 69, further
comprising an adhesive layer disposed on one of said first and said second plurality of
conductors.

Claim 72 (currently amended). The combination system of Claim 71, further
comprising a transparent layer disposed on said adhesive layer.

Claim 73 (currently amended). A system comprising In combination:
a liquid crystal display; and
a transparent touchpad directly disposed on said liquid crystal display,
including
a plurality of first conductors disposed along an X axis directly on said liquid
crystal display; and
a plurality of second conductors disposed along a Y axis and insulated from
said plurality of first conductors disposed along said X axis.

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Claim 74 (currently amended). The ~~combination~~ system of Claim 73, wherein an insulating layer insulates said plurality of first conductors disposed along said X axis from said plurality of second conductors disposed along said Y axis.

Claim 75 (currently amended). The ~~combination~~ system of Claim 73, further comprising an adhesive layer disposed on one of said first and said second plurality of conductors.

Claim 76 (currently amended). The ~~combination~~ system of Claim 75, further comprising a transparent layer disposed on said adhesive layer.

Claim 77 (currently amended). A system comprising In combination:
a fingerprint sensor having a surface layer; and
a transparent touchpad disposed on said surface layer, including a plurality of conductors disposed along at least one axis directly on said surface layer.

Claim 78 (currently amended). A system comprising In combination:
a passive graphic underlay; and
a transparent touchpad directly physically disposed on said passive graphic underlay but having no electrical interaction therewith, the transparent touchpad including a plurality of conductors disposed along at least one axis directly on said passive graphic underlay.

Claim 79 (previously presented). A substantially transparent capacitive sensor comprising:

an active area configured to accept input from a conductive object, said active area including a plurality of substantially transparent conductive traces disposed in an X axis and a plurality of substantially transparent conductive traces disposed in a Y axis;
wherein said capacitive sensor has substantially uniform transmissivity within said active area.

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Claim 80 (previously presented). The substantially transparent capacitive sensor of Claim 79, wherein said plurality of substantially transparent conductive traces disposed in said X axis and said plurality of substantially transparent conductive traces disposed in said Y axis together substantially occupy said active area.

Claim 81 (previously presented). The substantially transparent capacitive sensor of Claim 79, wherein said plurality of substantially transparent conductive traces disposed in said X axis and said plurality of substantially transparent conductive traces disposed in said Y axis are aligned to maximize transparency.

Claim 82 (new). The substantially transparent capacitive sensor of claim 79 further comprising a substantially transparent adhesive interposed between said conductive traces.

Claim 83 (new). The substantially transparent capacitive sensor of claim 82 wherein the substantially transparent adhesive has an index of refraction similar to an index of refraction of said conductive traces.

Claim 84 (new). The substantially transparent capacitive sensor of claim 79 wherein said conductive traces in the X axis and in the Y axis are spaced such that conductive traces in the X axis substantially fill spaces between conductive traces in the Y axis and vice versa to thereby form a substantially space-filling pattern across said sensory array.

Claim 85 (new). The substantially transparent capacitive sensor of claim 84 further comprising a substantially transparent adhesive interposed between said conductive traces and having an index of refraction similar to an index of refraction of the conductive traces.

Claim 86 (new). The system of claim 60 further comprising a substantially transparent adhesive disposed to fill gaps between the substantially transparent conductive traces.

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Claim 87 (new). A transparent capacitive touch sensor formed on a substrate for accepting an input from a conductive object, the system comprising:

a sensory array of substantially transparent conductive traces formed from a material having an index of refraction, the array comprising a first plurality of conductive traces disposed on said substrate in a first direction and a second plurality of conductive traces disposed on said substrate in a second direction different from said first direction, wherein the first and second pluralities of conductive traces are formed such that conductive traces in the first direction substantially fill spaces between conductive traces in the second direction and vice versa to thereby form a substantially space-filling pattern across said sensory array;

a substantially transparent adhesive interposed between said conductive traces and having an index of refraction similar to the index of refraction of the conductive traces to thereby provide a substantially uniform transmissivity across said sensory array; and

a sensing device electrically coupled to each of the conductive traces to thereby detect capacitance changes on said sensory array.